

**Background:** As Habitat homes are being built more tightly to reduce heat loss, there has been an increasing concern about the amount of fresh air coming into the house.

**Objectives:**

- Determine the desired level of ventilation for a habitat house in Arkansas.
- Determine the needs for fresh air exchange
- Select a few feasible ventilation solutions

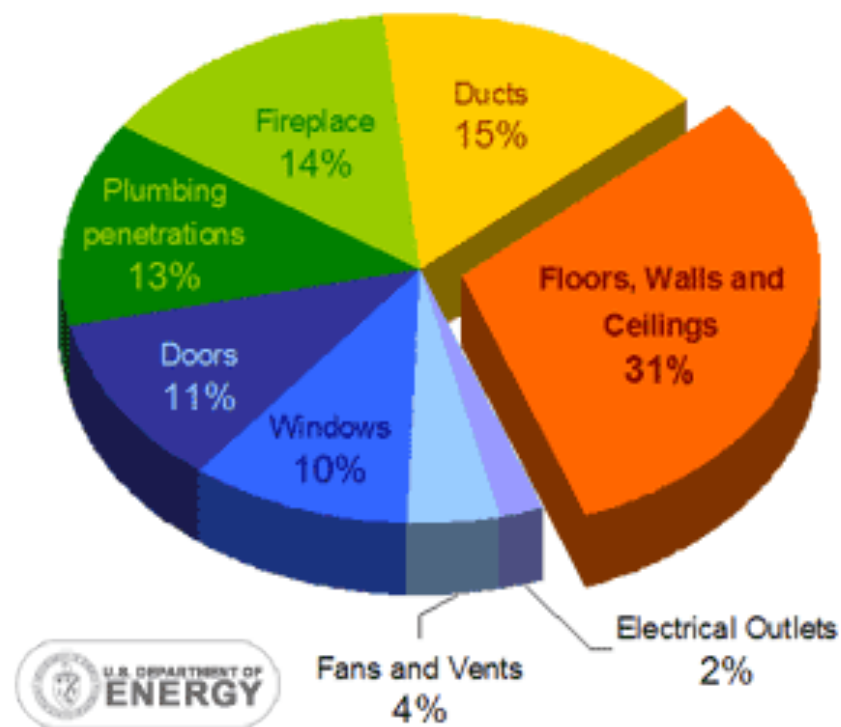
**Findings/Solutions:**

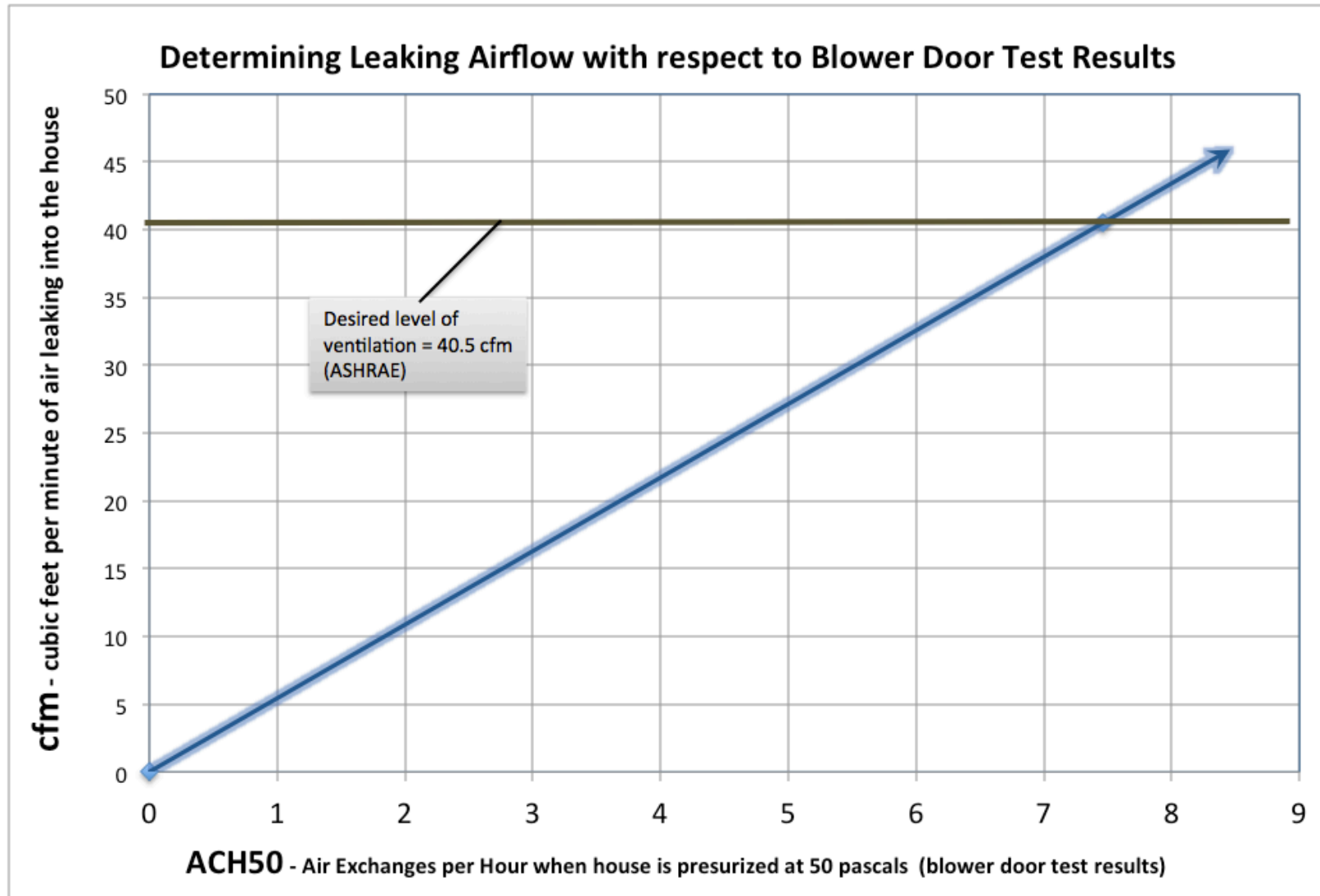
- Pollution sources such as pets, tobacco, food, VOC's, cleaning chemicals, smoke, mold and pollen can cause allergic symptoms and other more serious diseases.
- ASHRAE 62.2 requires 40.5 CFM for 1050 ft<sup>2</sup>

$$Q_{fan} = (0.01)A_{floor} + 7.5(N_{bedrooms} + 1)$$

- IECC: All homes in zones 3-8 (including Arkansas) will be required to have a whole-house mechanical ventilation system.
- EnergyStar & ASHRAE require  $\geq 5$  AHC continuous or  $\geq 100$  CFM intermittent for the kitchen and  $\geq 20$  CFM continuous or  $\geq 50$  CFM intermittent for the bathroom.
- The International Energy Conservation Code requires a blower door test result of less than 3 ACH50. 1

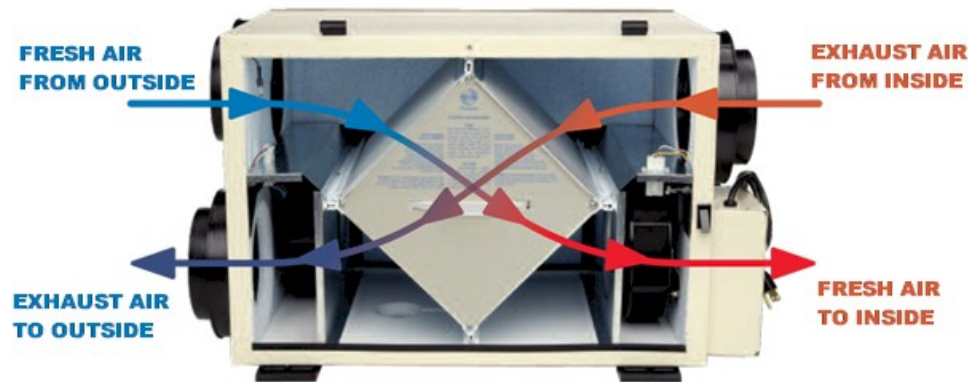
**HOW DOES THE AIR ESCAPES.?**





## Solutions:

- Bathroom & kitchen exhaust fans
  - Requires kitchen fan to run ~50% continuously or 2 bathroom fans to run ~100% continuously
  - These fans are generally loud and inefficient
  - *Information about how much wattage they actually consume and translate to a cost per year*
  - Doesn't include air intake, thus creating a negative pressure on the house.
  - Requires human control to turn on and off
- ERV such as Trane FreshEffects or Broan ERV
  - Good with Arkansas Humidity
  - Integration with heat & air control
  - Energy efficient
  - Cost: ~\$1100-\$1400 with installation.



## Benefits:

**HEALTH:** Immediate health risks associated with indoor air pollution such as asthma and flu will be reduced. Good air quality also reduces the risk of heart and lung diseases and cancer caused by pollution such as Radon, VOC's, fuel, and building materials.

**SUSTAINABILITY:** ERV systems recover energy from exiting air, thus reducing the energy consumption and cost.

**COST:** Multiple solutions are provided to support a variety of budgets. Each solution has a different operating cost.

**DURABILITY:** Fresh air reduces the risk of mold and other pollution damage to the house.